Smith et al discloses an electronic compass where magnetic sensors for measuring magnetic field of the Earth are disposed on each of three coordinate axes., i.e., x-axis, y-axis, and z-axis. Acceleration sensors for measuring the Earth's gravity are also disposed on the three coordinate axes of x-axis, y-axis, and z-axis, at column 8, lines 1 to 41, and in Fig. 5. In Smith et al, outputs of the magnetic sensors and the acceleration sensors are supplied to a microprocessor through a multiplexer and an A/D converter.

The object of Smith is to compensate for errors caused by magnetic perturbations, as disclosed at column 3, lines 42 to 55. Smith calculates the magnetic azimuth after performing the magnetic compensation for obtaining accurate estimate values for the Earth's magnetic field, as disclosed at column 8, lines 31-67. In particular, Smith compensates for errors that occur due to induced magnetic field perturbation $H_{INDUCED}$ and permanent magnetic field perturbation H_{PERM}, as disclosed at column 4, lines 38 to 49.

A distinctive feature of the present invention is that a directional measuring device comprises a tilt angle detector that detects an x-axis tilt angle and y-axis tilt angle, a converter that rotates the x-axis and the y-axis to obtain a rotated x-axis and a rotated y-axis that are in the horizontal plane, a primary azimuth calculator that calculates a primary azimuth that is an angle between the x-axis and the rotated x-axis, and an azimuth error angle extracting unit that extracts an azimuth error angle due to rotation by the converter, based on the x-axis tilt angle, the y-axis tilt angle and the primary azimuth, as recited in claim 1. Independent claim 7 requires the steps of rotating the x and y axes to obtain an x-axis tilt angle and a y-axis tilt angle, and extracting an azimuth error angle due to rotation by a converter.

The present invention differs from Smith in that the present invention extracts an azimuth error angle due to rotation by the converter, whereas Smith compensates for errors due to magnetic filed perturbation.

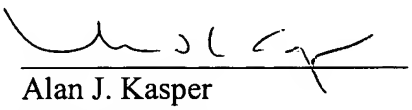
Therefore, Applicants respectfully submits that Smith fails to disclose the azimuth error angle extracting unit and extracting step that extracts, based on the primary azimuth calculated, the azimuth error angle due to rotation by a converter, and the technical idea of extracting the azimuth error angle using the tilt angle, i.e., acceleration information, and the primary azimuth.

Thus, Applicants respectfully submit that the present invention cannot be not anticipated by Smith, and therefore, is allowable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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